

15 December 1986

**BIOENVIRONMENTAL ENGINEERING/ENVIRONMENTAL MEDICINE**

**1. Objective of the Air National Guard Manpower Standard (ANGMS).** As prescribed in AFR 8-10, this ANGMS quantifies the manpower required to accomplish the tasks described in the Work Center Description (WCD) for varying levels of workload volume in the Bioenvironmental Engineering/Environmental Medicine function.

**2. Authority.** The AFR 160 and 161 series, AFOSH 161 series, ANGR 19-1 and 19-7, OSHA 19-10, all applicable MAC, TAC, SAC, ADTAC supplements and local and state directives contain command policy and procedural guidance for the Bioenvironmental Engineering/Environmental Medicine function. This ANGMS has been developed in accordance with procedures contained in AFR 25-5.

**3. Applicability:**

a. This manpower standard applies to all ANG flying unit Bioenvironmental Engineering/Environmental Medicine functions except Boise ID; Knoxville TN; Rickenbacker ANGB OH; Otis ANGB MA; Buckley ANGB CO; Selfridge ANGB MI; and units collocated on an active duty AF Base.

b. Units undergoing or scheduled for AFR 26-1, cost comparison studies, will be exempt from this standard application.

c. Units that undergo a cost comparison study and remain in-house may also be exempt from this standard application.

d. This standard applies to peacetime operations only.

**4. Standard Data:**

a. **Classification.** Type II Standard.

b. **Approval Date.** 3 February 1987

c. **Man-hour Data Source.** Operational Audit (technical estimate and historical record techniques).

d. **Standard Man-hour Equation.**  $Y = 79.65 + 3.587X$ .

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**e. Workload Factors:**

(1) Title: A casefile maintained.

(2) Definition: Total number of industrial and administrative casefiles maintained.

(3) Source: Aerospace Medicine Report, Section III, Para Bla(1) and para Blb(1).

**5. Application Instructions.** The AF Form 1113, Standard Manpower Table, is an aggregate of total manpower for FACs 5810 Medical Services, and 5820 Bioenvironmental Engineering/Environmental Medicine by specialty title and AFSC. These two workcenters are aggregated to make efficient use of functional manpower. To determine total manpower requirements, application of FACs 5810 and 5820 must be accomplished simultaneously. Step-by-step instructions follow:

a. Apply the manpower standards for FACs 5810 and 5820 using the man-hour equations shown in paragraphs 4d. Substitute the reported workload factors into the corresponding man-hour equation for  $X_1$  and  $X_2$  for FAC 5810, and  $X$  for FAC 5820.

b. Add the results of both equations and divide the total by 145.3 to arrive at the number of required authorizations. (Note: Any fraction will be rounded up to the next whole number).

c. On the Standard Manpower Table find the column in which the number of required authorizations fall to determine total manpower by AFSC.

**6. Statement of Conditions.**

a. Climatic Conditions. No impact.

b. Physical Layout of Facilities. Man-hours expended on travel depend on the size of the installation, dispersion and number of industrial facilities, water and air pollution sampling points and number and distance of GSUs serviced. Analysis of measured man-hours for travel proved not significant enough to develop a separate equation.

c. Physical Condition of Facilities. No impact.

d. Automated Capabilities. No impact.

e. Directed Performance Requirements. No impact.

f. Wartime Conditions. No impact. This standard determines peacetime requirements only.

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1. Work Center Description
2. Standard Manpower Table

## WORK CENTER DESCRIPTION

### Bioenvironmental Engineering/Environmental Medicine

#### DIRECT:

#### 1. CONSTRUCTION AND EQUIPMENT DESIGN REVIEW:

1.1. REVIEWS PLAN, WORK ORDER, CONTRACT, AND SPECIFICATION AS THE MEDICAL REPRESENTATIVE TO THE FACILITIES UTILIZATION BOARD (FUB).

1.2. RECOMMENDS CHANGE.

1.3. ATTENDS FUB MEETING.

#### 2. INDUSTRIAL ENVIRONMENT EVALUATION:

2.1. PERFORMS BASELINE SURVEY. Visits shop; surveys workplace; collects employee and operational data; prepares shop sampling routine required to establish baseline data on prevailing work environment; performs limited or extensive sampling based on nature and condition of the work environment and agent present; collects industrial hygiene data on noise, ionizing radiation, non-ionizing radiation, illumination, ventilation, air quality and heat or cold stress; collects pollution control data; evaluates data, posts all findings to shop folder; and prepares letter to inform shop supervisor of survey result, environmental condition present and recommended action.

2.2. PERFORMS SCHEDULED SURVEY. Visits shop; surveys workplace; updates employee and operational data; determines shop sampling routine required to assess possible change in the work environment; performs limited or extensive sampling based on nature and condition of the work environment and agent present; collects industrial hygiene data on noise, ionizing, non-ionizing radiation, illumination, ventilation, air quality, and heat or cold stress; collects pollution control data; compares current data to historical data in shop folder; evaluates current data and trend; posts current finding to shop folder; and prepares letter to inform shop supervisor of survey result, trend in environmental condition, and recommended action.

2.3. PERFORMS FOLLOW-UP EVALUATION. Visits shop and monitors specific agent as required by Air Force directive, Air Force Occupational Safety and Health (AFOSH) standard, or guide to good practice; and prepares required report.

2.4. PERFORMS UNSCHEDULED SURVEY. Visits shop; investigates work environment; identifies agent and exposure level; prepares comprehensive report of finding for appropriate authority; performs follow-up

investigation requested by Aerospace Medicine Council based on result of standard screening examination or Standard Form 513 Medical Record - Consultation Sheet, forwarded by attending physician; and completes AF Form 190, Occupational Illness/Injury Report.

2.5. COORDINATES WITH AEROSPACE MEDICINE COUNCIL AND UNIT OCCUPATIONAL SAFETY AND HEALTH COUNCIL. Coordinates with member of the Aerospace Medicine Council and Unit Occupational Safety and Health Council to ensure they are aware of agent exposure level found during shop survey.

2.6. MONITORS HAZARD ABATEMENT. Performs follow-up recommendation for abatement of occupational health hazard to ensure that corrective action has been initiated; maintains log of equipment and workplace deficiency and estimated cost of corrective action; updates log as deficiency is corrected; determines actual abatement cost; and reports abatement data as required by AFR 161-33, The Aerospace Medicine Program.

2.7. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

### 3. COMMUNITY ENVIRONMENT:

3.1. ASSESSES POTABLE WATER QUALITY. Collects sample for chemical and radiological analysis. Prepares container and form; collects sample; prepares shipping document; boxes sample; prepares for mailing; receives result; and compares with acceptable Safe Drinking Water Act, PL 93-323 criteria.

3.2. PERFORMS SANITARY SURVEY. Surveys barber and beauty shop, barracks, recreational area, day care facility, school, confinement facility, fire department, alert facility, public latrine, sanitary landfill; prepares report and submits to higher authority.

3.3. INSPECTS SWIMMING AREA AND TESTS WATER. Prepares form; inspects dressing and latrine facility for sanitation; inspects natural swimming area for underwater hazard; performs PH and chlorine test; collects sample for biological analysis; inspects chlorinator and protective respirator; resamples as necessary; investigates cause of deficient results.

3.4. INVESTIGATES ENVIRONMENTAL INCIDENT. Investigates fish kill and chemical spill; identifies cause; maintains liaison with Federal, State or local official; meets or briefs Environmental Protection Committee (EPC) and commander; performs sampling as necessary, compares result with previous result on file; and coordinates corrective action as necessary.

3.5. INSPECTS WASTE DISPOSAL FACILITY. Inspects base sewage plant, oil trap or separator, and waste oil collection tank; and advises using activity on waste disposal method.

3.6. MAINTAINS DATA ON NON-SERVICE ENVIRONMENTAL STANDARD. Reviews federal, state, and local regulation and standard; attends EPC meeting; provides technical assistance; and reviews environmental assessment or statement.

3.7. MONITORS AIR INSTALLATION COMPATIBLE USE ZONE PROGRAM (AICUZ). Attends public meeting as technical advisor; conducts noise survey as necessary; and performs study of AICUZ data in conjunction with the Occupational Environmental Health Laboratory (OEHL).

3.8 PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

#### 4. WATER AND AIR POLLUTION MONITORING:

4.1. ASSESSES WATER POLLUTION MONITORING REQUIREMENT. Identifies and evaluates potential pollution source; develops sampling program; plots sample point on map; coordinates sample submission schedule with OEHL; and maintains or revises the base supplement to AFR 19-7, Environmental Pollution Monitoring.

4.2. MONITORS NATIONAL POLLUTION DISCHARGE EMISSION SYSTEM (NPDES). Performs grab sampling or composite sampling; prepares sample container and form; collects sample; performs PH, temperature, and dissolved oxygen test on site; for composite sampling, calibrates sampling pump and measures flow on site; records result on container; preserves sample; prepares shipping document; boxes sample; prepares for mailing; receives result from the OEHL; compares with previous result; and submits result to Environmental Protection Agency and base EPC.

4.3. ASSISTS CIVIL ENGINEERING WITH ANNUAL AIR POLLUTION EMISSION INVENTORY. Reviews air pollution emission documentation prepared by Civil Engineering; coordinates recommended change; and provides Civil Engineering technical assistance required for accurate completion of the annual inventory.

4.4. PERFORMS AIR SAMPLING. Prepares sampling equipment; collects sample; prepares or preserves sample; prepares shipping document; boxes sample; prepares for mailing; receives result from the OEHL; compares with previous result; and submits to EPA.

4.5. ASSISTS IN PREPARATION OF REQUEST FOR LOCAL OR STATE LICENSE OR PERMIT.

4.6. PROVIDES POLLUTION DATA REQUESTED BY STATE OR LOCAL AGENCY.

4.7. COORDINATES WITH UNIT EPC.

4.8. PERFORMS TRAVEL.

## 5. RADIATION CONTROL:

5.1. MAINTAINS INVENTORY OF RADIATION SOURCE. Maintains inventory of radiation source on the installation such as X-ray unit, microwave transmitter, radioactivity source, radio frequency source, microwave oven, and laser system; notes addition or modification to radiation source inventory when visiting installation building; posts change to inventory; determines operating characteristic, use and hazard category of new and modified radiation source; and posts data to inventory.

5.2. EVALUATES HAZARD OF NEW OR MODIFIED RADIATION SOURCE. Surveys facility; determines permissible exposure level and safe exposure distance; evaluates operating procedure and recommends appropriate physical and administrative control for protection of personnel; identifies and recommends appropriate measure area where permissible exposure level can be exceeded; specifies hazard warning, physical barrier, personal protective clothing and device requirement; and identifies requirement for restricting access and posting hazard warning in hazardous area. For airborne systems: evaluates ground operation; identifies hazard area, and recommends appropriate access control. For laser system: evaluates operating range and target; identifies hazard area; and recommends appropriate access control and hazard warning.

5.3. MONITORS AND RECORDS EXPOSURE TO IONIZING AND RADIATION. Enters and removes personnel into or from the Film Dosimetry program, exchanges film in film holder, documents film issue, returns film and documentation to the USAF Occupational and Environmental Health Laboratory, maintains AF Form 1499, USAF Occupational Exposure to Ionizing Radiation (S&I), USAF Occupational and Environmental Health Laboratory, and Form 1527, History of Occupational Exposure to Ionizing Radiation, (S&I) USAF Occupational and Environmental Health Laboratory (USAF OEHL), and drafts and finalizes required report.

5.4 PROCESSES LICENSE OR PERMIT FOR RADIOACTIVE MATERIAL. Coordinates application; visits user to verify accuracy of statement; leak tests authorized source; provides monitoring service upon request; and provides technical assistance as required.

5.5. MONITORS SHIPMENT OF RADIOACTIVE MATERIAL. Leak tests incoming or outgoing material; takes swipe sample of radioactive waste; and documents result.

5.6 MONITORS STORAGE OF RADIOACTIVE MATERIAL. Surveys each storage once per quarter, prepares report, and updates file.

5.7. PERFORMS RADIATION PROTECTION OFFICER DUTY. Develops emergency procedures as necessary; monitors clean-up of accidental release; and prepares report of incident.

#### 5.8. MONITORS RADIO FREQUENCY (RF) RADIATION:

5.8.1. SURVEYS MICROWAVE OVEN. Performs periodic site survey, documents survey on FDA Form 2536, Microwave Oven Field Test Record; and documents finding.

5.8.2. SURVEYS GROUND RADIO AND RADAR EQUIPMENT. Makes presurvey visit to collect data; conducts periodic survey; outbriefs user; documents findings; and annotates shop folder.

5.9. INVESTIGATES POTENTIAL OVEREXPOSURE. Interviews patient, witness and supervisory personnel; recreates exposure level; prepares formal report documenting incident; and forwards report to appropriate authority.

5.10. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

#### 6. DISASTER CONTROL:

6.1. PARTICIPATES IN PLANNING FOR CONTROL OF INCIDENT. Develops and reviews input to Annex F of Disaster Preparedness Operations Plan 355-1, and the Hospital Disaster Control Plan.

6.2 RESPONDS TO ACTUAL OR PRACTICE EXERCISE. Responds to actual or practice exercise as a member of the emergency response team.

6.3. MAINTAINS DISASTER PREPAREDNESS EQUIPMENT. Reviews new and revised technical publication to ensure compliance with proper operation of disaster preparedness equipment, coordinates equipment calibration, and maintains necessary equipment.

6.4. PREPARES FOR TRAINING. Prepares for training for medical personnel on disaster preparedness team.

6.5. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

#### 7. ENTOMOLOGY:

7.1. COORDINATES CONTROL MEASURE. Coordinates with Base Civil Engineer (BCE) Entomology Section for control or eradication of arthropod and insect; recommends pesticide for use; and monitors application.

7.2. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

#### 8. BIOENVIRONMENTAL ENGINEERING/ENVIRONMENTAL MEDICINE SUPPORT TO GEOGRAPHICALLY SEPARATED UNIT (GSU):



8.1. PROCESSES HOST-TENANT SUPPORT AGREEMENT OR LETTER OF AGREEMENT.

8.2. PERFORMS ENVIRONMENTAL HEALTH SURVEY.

8.3. PROVIDES OCCUPATIONAL MEDICINE SUPPORT.

8.4. PROVIDES ASSISTANCE AS REQUIRED.

8.5. TRAVELS TO GSU. Travels from work center to installation supported and from installation supported to the work center.

9. EXCEPTION CODING PROGRAM FOR HAZARDOUS OR TOXIC SUBSTANCE:

9.1. REVIEWS MASTER LISTING, ASSIGNS ISSUE EXCEPTION CODE (IEX-CODE) AND PERFORMS REQUIRED RESEARCH. Reviews master listing of all hazardous or toxic substance used on the installation; determines and advises Base Supply concerning IEX-code for substance; and researches item composition, toxicity and need for certification when required.

9.2. REVIEWS IEX 8 (EIGHT) AND 9 (NINE) LISTING. Reviews listing of exception code item, and updates shop folder as required.

9.3. REVIEWS ISSUE DOCUMENT. Reviews each issue document received from Base Supply, checks shop folder for usage control and required protective equipment.

9.4. REVIEWS CARGO CODE DOCUMENT.

9.5. COORDINATES PROGRAM. Coordinates the IEX Program with Base Supply.

10. TANK CLEANING. Assists the BCE liquid fuels system maintenance supervisor with the medical aspect affecting tank inspectors and cleaners.

11. ENVIRONMENTAL DIFFERENTIAL PAY (EDP) EVALUATION:

11.1. CONDUCTS ANNUAL REVIEW. Reviews shop folder; visits work center as required to validate working condition supporting EDP; and reports finding to the Civilian Personnel Office (CPO).

11.2. REVIEWS AND EVALUATES NEW REQUEST. Reviews shop folder; interviews shop supervisor and commander; coordinates with Base Safety on all aspects of requirement and condition supporting EDP; and reports finding to the Civilian Personnel Office.

11.3. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

12. RESPIRATORY PROTECTION:

12.1. MONITORS RESPIRATORY PROTECTION PROGRAM. Initiates or updates written procedure on the respiratory program, and coordinates with applicable personnel.

12.2. PROVIDES GUIDANCE. Based on agent exposure level documented during baseline and periodic shop survey, advises organizations on use, storage, ordering procedure and type of approved respirator for the activity being performed.

12.3. PROVIDES PERSONAL FITTING SERVICE. Adjusts and leak tests each respirator issued by Base Supply.

12.4. CONDUCTS TRAINING. Conducts training on the care and use of respirator for worker and supervisor who utilizes respirator; and advises on cleaning, fitting and maintaining respirator.

12.5. MAINTAINS RESPIRATOR. Maintains respirator used by the work center for training.

### 13. OCCUPATIONAL VISION PROGRAM:

13.1. INSPECTS SHOP. Visits each shop annually as a member of the Occupational Vision Team.

13.2. PERFORMS SURVEY. Performs illumination and laser survey when required.

13.3. SCHEDULES WORKER FOR VISUAL SCREENING EXAMINATION.

13.4. ARRANGES FOR PRESCRIPTION LENS ISSUE.

13.5. PERFORMS TRAVEL. Travels from work center to job site and from job site to work center.

### 14. OCCUPATIONAL MEDICINE PROGRAM:

14.1. RESEARCHES SHOP FOLDER. Researches agent exposure in each shop folder to determine need for screening examination.

14.2. PREPARES STANDARD SCREENING EXAMINATION LIST. Prepares standard screening examination list from research of shop folder.

14.3. SUBMITS STANDARD SCREENING EXAMINATION LIST FOR APPROVAL. Presents the standard screening examination list to the Aerospace Medicine Council for approval, and makes correction as required by the Council.

### 14.4. MONITORS THE INDUSTRIAL PHYSICAL EXAMINATION PROGRAM:

14.4.1. MAINTAINS RECORD. Maintains listing or card file for all personnel requiring an industrial physical.

14.4.2. SCHEDULES EXAMINATION. Assists medical personnel in preparation of notification letter, telephones supervisor to inform of scheduled appointment or forwards scheduling data card to individual.

14.4.3. PREPARES DOCUMENTATION. Prepares request for ancillary service using standard screening examination list; gives request for ancillary service to patient; and instructs patient on examination procedure.

14.4.4. ANALYZES TEST RESULT. Compares result of ancillary service to acceptable normal standard to determine if further action is necessary.

14.4.5. ANNOTATES CARD FILE, LISTING OR MEDICAL RECORD. Annotates result of ancillary service on card file, listing or medical record, and files documentation.

14.4.6. RESCHEDULES EXAMINATION OR PORTION OF EXAMINATION. Reschedules complete examination or portion of examination when warranted by circumstance.

14.4.7. ARRANGES REQUIRED FOLLOW-UP ACTION. Based on analysis of ancillary service, coordinates with supervisor and worker, schedules appointment with a physician, and interviews worker as required to obtain medical data or assists in identifying potential health problem.

14.4.8. COORDINATES WITH MILITARY AND CIVILIAN PERSONNEL. Coordinates with military and civilian personnel to update examination roster.

14.4.9. VERIFIES EXAMINATION. Reviews completed examination data and listing or card file to ensure that scheduled personnel receive required examination.

14.4.10. ANALYZES DATA FOR TREND. Extracts data from current and past examination result, arrays data, analyzes data to identify unfavorable trend or other indicator or potential health problem.

14.5. MONITORS AUDIOMETRIC EXAMINATION.

14.6. INVESTIGATES TOXOLOGICAL EXPOSURE. Coordinates SF Form 513 with attending physician and determines clinical follow-up procedure; interviews patient; prepares request for ancillary services; reviews work place evaluation results with the Bioenvironmental Engineer; prepares AF Form 190 and submits to USAF School of Aerospace Medicine EDED with information copy to HQ USAF/SGPA.

## 15. HEALTH EDUCATION:

15.1. CONDUCTS LECTURE OR BRIEFING. Prepares for lecture or briefing by researching and organizing material; prepares training and visual aids; and presents lecture or briefing on disease prevention, personal sanitation, hearing conservation, respiratory protection, general health record, radiation hazard, etc.

15.2. PREPARES ARTICLE FOR PUBLICATION. Prepares article for publication in local base newspaper or daily bulletin, and coordinates with the Office of Information as required.

15.3. PERFORMS TRAVEL.

16. COMPENSATION CLAIM. Investigates claim for compensation by civilian employee; requests previous record as required; extracts data, analyzes data and prepares report.

17. HAZARDOUS WASTE MANAGEMENT:

17.1. ASSISTS BCE IN IDENTIFICATION OF HAZARDOUS MATERIAL. Identifies hazardous material to be disposed of as required by local, state and federal regulation and guidelines.

17.2. MONITORS MANIFESTING, SAFEHANDLING, LOADING, AND REMOVING HAZARDOUS WASTE FROM INSTALLATION. Ensures compliance with federal, state and local requirement.

17.3. PERFORMS LIMITED OR EXTENSIVE SAMPLING OF MIXED OR CONTAMINATED MATERIAL. Prepares documentation and submits to Department of Property Disposal (DPO) or OEHL.

**INDIRECT:** Indirect work involves those tasks that are not readily identifiable with the work center's specific product or service. The major categories of Standard Indirect work are Supervision, Administration, Meetings, Training, Supply, Equipment Maintenance, and Cleanup. See AFMS 00AA for the Standard Indirect Description.

## STANDARD MANPOWER TABLE

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